

The Director's Office announces the recipients of the 2013 Berkeley Lab Prize – Lifetime Achievement Awards

The Berkeley Lab Prize – Lifetime Achievement Award is presented to up to two individuals to honor career-spanning exceptional achievements and contributions in one or more of the following three areas:

- Scientific: Significant scientific or technical contribution leading to important progress in an area of research or toward completion of a project
- Operations: Achievement, collaboration, leadership
- Societal Impact: Solving important challenges for society, research that furthers solutions to large social problems, or scientific breakthroughs that have improved the world

The following individuals will receive awards:

David Nygren (Scientific)

Nominated by Robert Cahn, an excerpt from the nomination reads:

“Dave Nygren is the most distinguished developer of instrumentation in particle physics. The most famous of his inventions is the Time Projection Chamber. The TPC was conceived as a detector for PEP at SLAC in the mid-1970s. It has electric and magnetic fields, both parallel to the axis of a large cylinder filled with gas. Fast charged particles travelling through the TPC create electron-ion pairs and the electrons drift, opposite to the electric field, to the ends of the cylinder. The axial magnetic field bends the paths of the fast charged particles to provide a measure of the transverse momentum.

The TPC has been a mainstay of particle and nuclear physics experiment ever since. TPCs were the heart of the ALEPH and DELPHI experiments at LEP, of the STAR experiment at RHIC, and of ALICE at LHC. TPCs have been shown capable of dealing with extremely complex events, like those at ALICE with thousands of tracks. Remarkably, TPCs are also the detector of choice for extremely low-rate dark matter experiments, like LUX. Nygren, himself, is presently developing a gaseous xenon TPC for a neutrinoless double beta decay experiment, NEXT.

Nygren's creative particle detection schemes have transformed other fields, as well. By turning silicon strip detectors designed for particle physics on their ends, he created detectors with superb spatial resolution and the ability to count individual x-ray photons for medical applications. Hundreds of thousands of mammograms have been taken with this system. Nygren also recognized that silicon detectors being developed for high energy physics provided a basis for CCDs with increased sensitivity in the near infrared. The LBL CCD is now the standard for astrophysical applications, a key reason for the recent success of the BOSS experiment, and essential for the follow-on BigBOSS experiment. Dave also designed the system for conveying data from deep under-ice detectors without loss of information, a key capability for the Ice-Cube experiment.

In an era when more and more experiments require hundreds or even thousands of scientists, Dave Nygren has shown that a single individual's creativity can be transformative.”

Arie Shoshani (Scientific)

Nominated by Mehmet Balman, Surendra Byna, Amy Chen, Junmin Gu, John L. McCarthy, Victor Markowitz, Henrik Nordberg, Prabhat, Alexandru Romosan, Doron Rotem, Alexander Sim, Ernest Szeto, and John Wu, an excerpt from the nomination reads:

“Dr. Arie Shoshani has served the Berkeley Lab for more than 35 years. His work is essential to establishing the data-driven approach as a new paradigm of scientific discovery. He has actively supported budding scientists to find their niches in the Lab and the society at large. The nominators have all benefited tremendously in their respective careers from his vision and insight. We emphatically and enthusiastically nominate Dr. Shoshani for the Berkeley Lab Prize in recognition of his life-long outstanding scientific achievements and extraordinary service to the Lab. Dr. Arie Shoshani is a visionary, and has recognized the importance of Big Data to scientific discoveries decades before others, as Dr. Patrick Fuhrmann from Deutsches Elektronen-Synchrotron (DESY) in Germany, the principle investigator of the European Middleware Initiative noted in his endorsement letter, Arie has "been ahead of time by at least a decade and revolutionized the way scientists in high-energy physics and other sciences were able to manage their Big Data". He has pioneered, and developed key technologies in the fields of Scientific Data Management and Statistical Data Management. Since 1978, he has been leading LBNL's Scientific Data Management Research Group, and he is a leading thinker on the tools and techniques for Big Data.”

Honorees will be acknowledged at a future Lab awards ceremony and reception.